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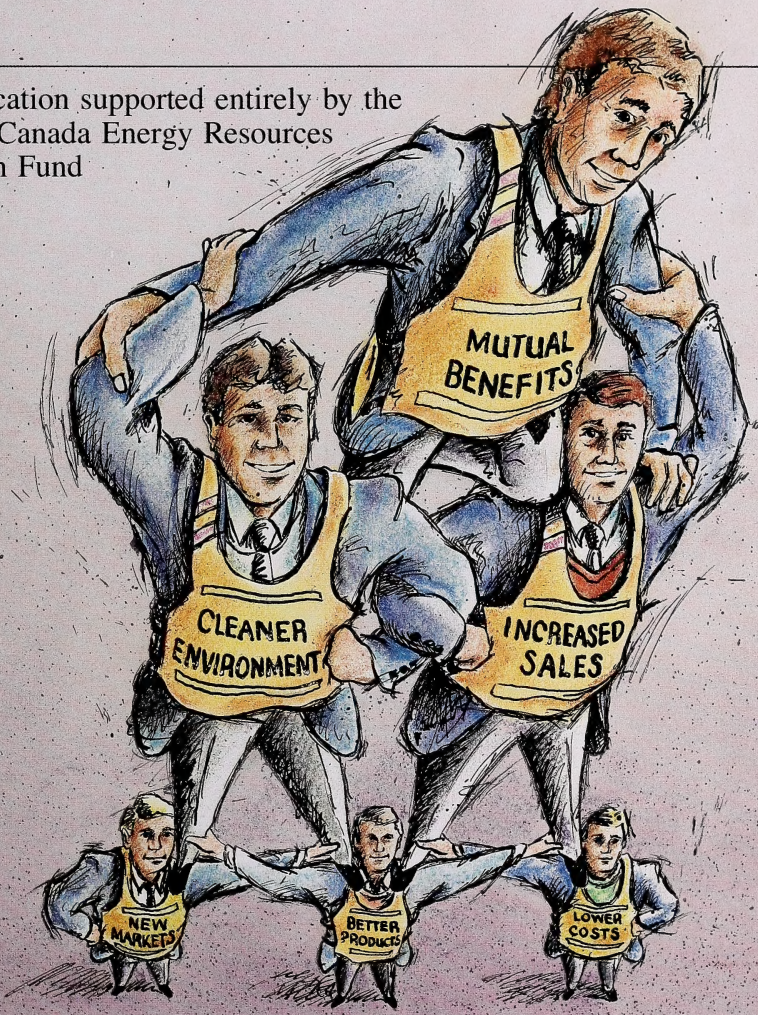
Alberta ENERGY

Scientific and Engineering Services

The Technical Committee Approach to Coal Research

A publication supported entirely by the Alberta/Canada Energy Resources Research Fund



ALBERTA OFFICE OF COAL RESEARCH & TECHNOLOGY

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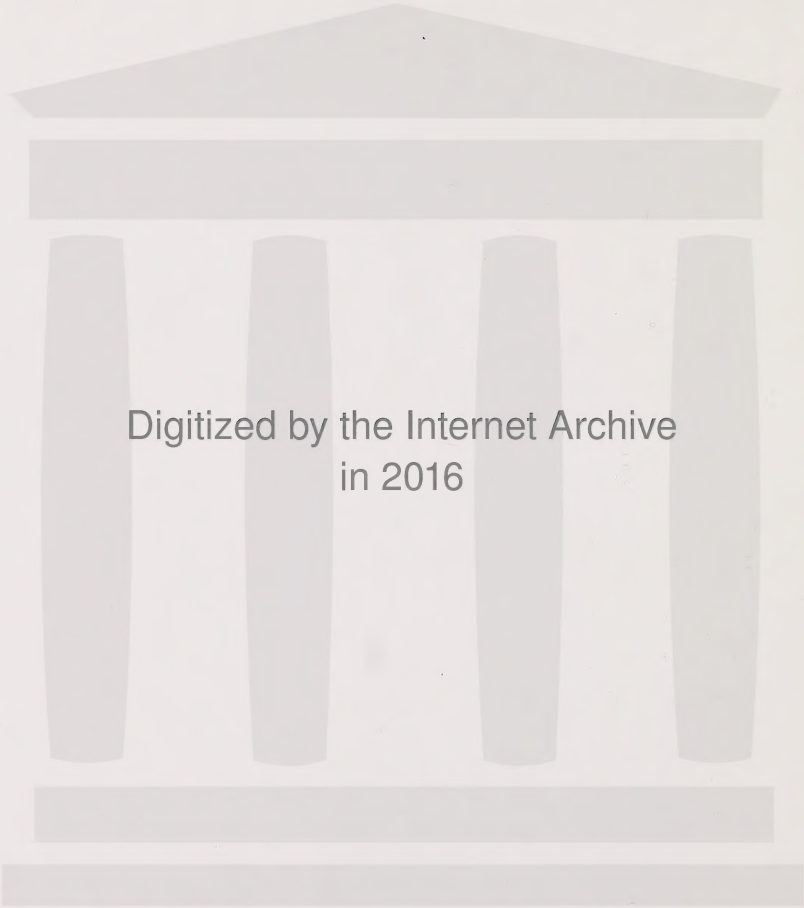
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1988
Edmonton

Alberta
ENERGY
Scientific and Engineering
Services and Research Division

ISBN 0-86499-585-7
Pub. No. I/261

Foreword

Since 1976, numerous projects have been initiated in Alberta by industry and by academic research institutions which are aimed at better utilization of Alberta's energy resources.

These research, development and demonstration efforts were funded by the Alberta/Canada Energy Resources Research Fund (A/CERRF), which was established as a result of the 1974 agreement on oil prices between the federal government and the producing provinces.

Responsibility for applying and administering the fund rests with the A/CERRF Committee, made up of senior Alberta and federal government officials.

A/CERRF program priorities have focused on coal and conventional energy resources, as well as energy conservation and renewable energy. Program administration is provided by staff within the Scientific and Engineering Services and Research Division of Alberta Energy.

In recognition of the importance of coal to Alberta's economy, the Alberta Office of Coal Research and Technology was established in 1984 within Alberta Energy and Natural Resources (now Alberta Energy). Its primary purpose is to encourage the development and application of new technologies related to Alberta coals. The Office provides funding contributions to research and development projects in industry, academic institutions and other research establishments and monitors their progress in an overall program of improving the production, transportation and marketability of Alberta coals.

In order to make research results available to industry and others who can use the information, highlights of studies are reported in a series of technology transfer booklets. For more information about other publications in the series, please refer to page six.

The Technical Committee Approach to Coal Research

In 1985, an ad hoc joint industry/government program development committee was established to advise the Alberta Office of Coal Research and Technology on areas of research pertaining to coal use. The committee comprised representatives of coal mining companies, Canadian boiler manufacturers, electric utility companies and the Office, assisted by the Coal and Hydrocarbon Processing Department of the Alberta Research Council.

Discussions among the various participants led to an agreement on the need for several major coal-use research programs. These would be managed by technical committees comprising co-chairmen from industry and government, and involve appropriate representatives from contributing organizations. As a result, successful coal-use projects were conducted during 1986, 1987 and 1988, which established considerable confidence in the technical committee approach to coal research. This led to the establishment of technical committees which oversee programs in coal mining, handling and preparation, in addition to coal-use research.

Research Rationale

In 1983, extensive discussions among individual coal producers and the Alberta government were held concerning the future of Alberta's coal industry. This resulted in the Alberta Coal Research Strategy, which was made public in November 1983. Two months later, the Alberta Office of Coal Research and Technology was established to provide a vehicle for carrying out the coal research programs advocated in the strategy.

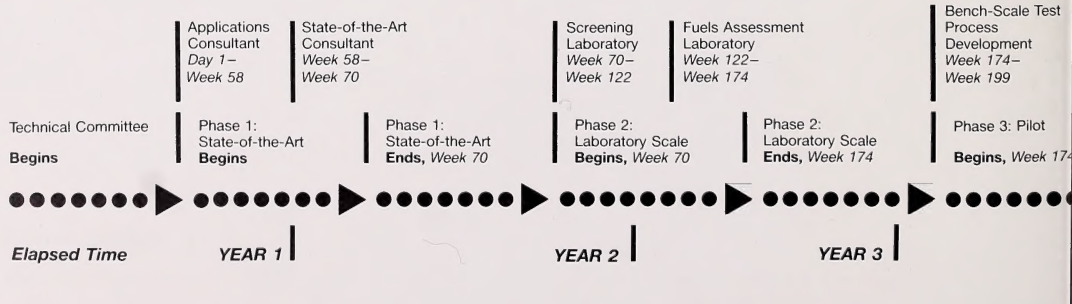
The research work funded by the Office is directly related to the objectives of the Alberta Coal Research Strategy. These objectives are primarily concerned with ensuring that the coal-related technologies needed to fully realize the economic potential of Alberta's coal deposits are available in a timely manner. This is to be accomplished through co-operation among the private sector, research community and government.

Technologies likely to be commercially important during the period 1988 to 1998 will be identified, investigated and developed to:

- enhance the competitiveness of Alberta coals in international markets;
- minimize the environmental impact from production or use of coal in Alberta; and
- generate new uses for Alberta coals.

In carrying out this research program, the Alberta government believes that the private sector should take the lead in identifying and managing appropriate research and development programs, as well as implementing and commercializing the results. The role of the Office and other government agencies such as the Alberta Research Council,

Generic Program Evaluation and Review Task (PERT) Chart


Applications Consultant Day 1– Week 58
State-of-the-Art Consultant Week 58– Week 70
Screening Laboratory Week 70– Week 122
Fuels Assessment Laboratory Week 122– Week 174
Bench-Scale Test Process Development Week 174– Week 199
Technical Committee Begins
Phase 1: State-of-the-Art Begins
Phase 1: State-of-the-Art Ends, Week 70
Phase 2: Laboratory Scale Begins, Week 70
Phase 2: Laboratory Scale Ends, Week 174
Phase 3: Pilot Begins, Week 17
Elapsed Time
YEAR 1
YEAR 2
YEAR 3

along with universities and industrial research organizations such as the Coal Mining Research Company, is to support the private sector to the extent necessary to achieve the desired technical results in the most efficient manner. Consequently, the primary role of the Office is to provide funding for research projects carried out by others. Much of this funding is provided by the Alberta/Canada Energy Resources Research Fund (A/CERRF).

In a typical project supported by the Office, research is divided into four phases of activity:

Phase 1 – state-of-the-art definition;

Phase 2 – laboratory- and bench-scale experimentation;

Phase 3 – precommercial, pilot-scale experimentation; and

Phase 4 – commercial-scale demonstration.

Research Planning

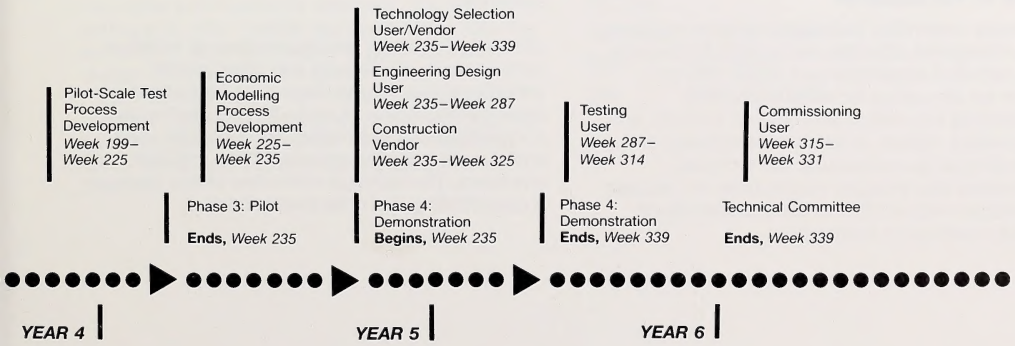
Since 1985, a standard process of research program planning has evolved. An initial industry consultation session is convened by the Office to allow industry participants to identify problems, issues, priorities and potential partners in new research ventures. Experience has shown that these initial meetings are most productive if attended by representatives of coal producers, users and transporters, and consulting firms.

If participants in this initial meeting agree that the potential for a new technology is sufficiently high to attract industry participation, a statement of program purpose, objectives, scope and structure is prepared. Normally, costs are not assessed at this stage, but it is generally acknowledged that any subsequent technology development will require two to five years to complete. This allows participants to begin suggesting key projects and program milestones. Usually, the initial consultation meeting will produce a broad program plan which can be presented to industry executives and the Office for approval.

If two or more companies agree to the plan, an organizational meeting is held to create a program technical committee. At that meeting, program costs are estimated as a guide to deciding how much each participant should contribute. These contributions, of course, must be approved by the management of each participating company. Subsequent to this meeting, the program concept and plan are reviewed by the technical committee at least once a year.

Project Specifications

The overall costs of the program are derived from a list of individual projects, for which specifications must be prepared. When complete, these specifications become requests for proposals. The technical committee defines each project by topic, purpose, objectives, scope (in terms of time, cost, geographic location and required expertise) and specific terms of reference. To achieve maximum participation in the project by each technical committee member, an effort is made to achieve consensus on each item in the specifications.



Calls for Proposals

To expedite proposal calls, a list of qualified firms is prepared and accepted on an issue-by-issue basis. The list is kept current by personal contacts, site visits and the maintenance of prospectus files. Proposals are sent to a single source only if there is a compelling reason to do so.

Proposal Evaluation Process

Proposals are reviewed and evaluated by technical committee participants, who seldom require external peer reviews before making their selections.

Unanimity among technical committee members is not essential because participants are not obliged to invest in all projects. If this situation arises, companies interested in the issue and willing to fund research in that area will form a working group and consortium to pursue the problem independently and seek funding from governments. They may or may not choose to report to the technical committee on the progress of projects; however, they generally do.

Program Scheduling

Most technical committees prefer to work with a five-year plan that can be reviewed and modified whenever new projects are contemplated, or when results from a project suggest a change in the concept is required.

Technical Committees

Organization

Typically, technical committees are co-chaired by an industry representative (usually the consortium leader) and a government member. These individuals, along with a project manager, and a hired consultant acting as secretary, form the executive of a technical committee. As required, working group chairmen also attend meetings of the executive.

Role of Participants

Technical committee participants provide technical and managerial expertise and funding for projects. The technical committee as a whole acts as a forum for discussing technical issues and exchanging information and data on scientific and engineering matters. In addition to receiving and evaluating project proposals, the technical committee also provides opportunities for process developers and vendors to make presentations during meetings or workshops.

Industry Consortia

Technical committees provide a framework for the formation of industry consortia which establish joint venture groups and enter into contracts with governments for funding, and with researchers to perform specific studies or investigations. Generally, government funding agencies provide 50 to 60 per cent of funds for precommercial research, with the balance provided by the private joint venture. Occasionally, the joint venture will arrange for work to be undertaken without government participation. Funding formulas are intentionally kept flexible to allow for the needs of participants and the nature of particular projects.

Working Groups and Task Groups

Working groups and task groups usually have co-chairmen, with a consultant acting as a secretary to each group. Working groups disband when a project is completed.

Program and Project Control

Reporting Mechanisms

Technical committees function on a "pay-to-play" basis. Consequently, full project reports are available only to direct participants. Because every member does not participate in each project and no one is obliged to participate in more than one, confidentiality is left to the discretion of working groups. Usually, provision is made to release a summary of results to non-participants to expedite the work of the committee or attract participants for later phases of activity.

Decision-making and Accountability

Technical committees do not make decisions. Rather, they recommend courses of action to individual companies and government agencies for decision. While technical committees are forums for discussion and joint action among groups with common interests, individual decisions are made elsewhere.

Similarly, while tasks can be assigned by technical committees to participants and other project performers, these committees have no authority for implementing tasks. As such, no one can be held accountable to a committee. Accountability rests entirely with individual representatives and their employers. The technical committee simply serves as a co-ordinating and collaborative body.

Technology Transfer

The technical committee is actually a technology transfer body because industry participants are generally users of any information generated by projects. However, to ensure that results are made available to appropriate non-participants, workshops can be arranged.

Hardware development and demonstration are integrated into the operations of participants as much as possible to enhance expertise as projects progress. Often, project technology becomes an integral part of the client's operation before the final report is issued. Users are encouraged to include preparation of training manuals and programs in their studies.

Budgets

Resource Forecasting

Resource forecasting for research and development work is always difficult, but as a first approximation, Phase 1 studies are generally limited to $50 000 and always include a requirement that estimates of Phase 2 work must be provided. Usually, approval to proceed to the next phase is contingent upon satisfactory performance in the preceding phase and provision of a budget and work plan that are satisfactory to, and approved in advance by, the technical committee or working groups. If a Phase 1 study costs $50 000 and is funded by five industry participants and the Office, the costs per industry participant will be $5 000, assuming the Office contributes 50 per cent. This means that each industry participant pays only 1/10 the cost of the same study funded by a single company.

Budgets and Budget Control

All budgets are prepared according to phase and government fiscal periods (April 1 to March 31 of the following year). All agreements are fixed price. Generally, budget control is exercised by the total contract amount, but certain agreements include a requirement for control by allotment. Those participants who manage each agreement have the authority to approve changes to personnel and charge-out rates, but are able to make recommendations only with respect to allotment changes. Before the total amount of any project can be amended, a new proposal must be submitted and a formal contract amendment must be prepared.

Evaluation of Programs and Projects

Program progress is evaluated continuously by participants. A full program review is carried out annually, with varying degrees of formality.

Project progress and evaluation of project final reports are the responsibility of working groups. Quarterly and annual progress reports on programs and individual projects must be submitted to the Alberta Office of Coal Research and Technology.

Conclusions

Private corporations have found that the information resulting from participation on technical committees is useful in keeping abreast of technological innovations which could potentially improve their operations or open new markets for their products and services. In addition, an awareness of existing or emerging technology is useful to companies in formulating a sound strategy for corporate investment.

Government funding agencies find the technical committee approach useful because the research they ultimately support has already been identified as important by potential users of the knowledge.

Contacts

Those interested in participating in technical committees or wishing to initiate discussions on coal research topics of interest to Alberta should contact:

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ISBN 0-86499-585-7
Pub. No. I/261